

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO COMMERCIAL

Report Number: P775828

Luminaire Tested: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775828
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B048)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

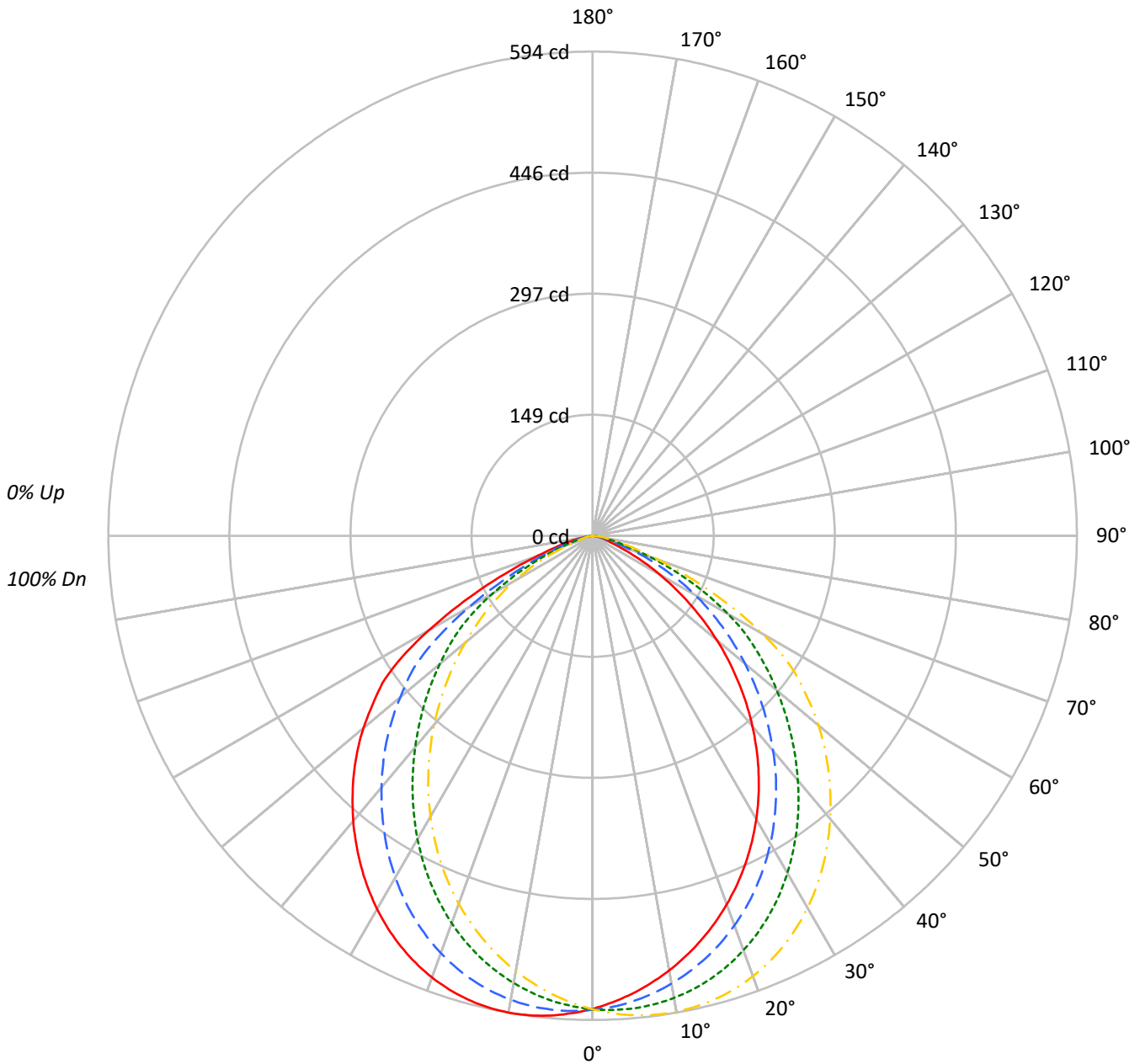
Lumens per Lamp: N/A
Luminaire Lumens: 1289.1 lumens
Efficiency: N/A
Efficacy: 128.9 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.17 / 1.27
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

Input Watts (W): 10
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	111	107	103	100	108	105	101	98	100	98	95	97	94	92	93	91	90	88								
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	83	80	78	76								
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	75	71	67	65								
4	87	76	68	62	84	74	67	61	72	66	61	70	64	60	68	63	59	57								
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50								
6	74	62	53	48	72	61	53	47	59	52	47	57	51	47	56	50	46	44								
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39								
8	64	52	44	38	63	51	43	38	50	43	38	48	42	37	47	42	37	35								
9	60	47	40	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32								
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17738	17738	17738	17738
5°	17273	17833	18106	17548
10°	16781	17844	18418	17274
15°	16240	17766	18623	16907
20°	15634	17580	18730	16427
25°	14943	17278	18733	15833
30°	14151	16844	18638	15145
35°	13227	16284	18453	14349
40°	12148	15611	18202	13495
45°	10898	14848	17884	12590
50°	9433	14012	17422	11622
55°	7729	13062	16735	10555
60°	5789	11711	14166	8634
65°	3713	9435	10265	6177
70°	2098	6481	6347	3722
75°	1592	3787	4011	2017
80°	1125	2092	2286	967
85°	666	1156	596	420

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 18134 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	54.8	4.3
10°-20°	155.1	12.0
20°-30°	228.4	17.7
30°-40°	261.8	20.3
40°-50°	252.0	19.5
50°-60°	200.9	15.6
60°-70°	104.3	8.1
70°-80°	28.1	2.2
80°-90°	3.6	0.3
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	438.3	34.0
0°-40°	700.1	54.3
0°-60°	1153.1	89.4
0°-90°	1289.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1289.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	581	581	581	581	581	
5°	564	582	591	573	564	53
15°	514	562	589	535	514	144
25°	444	513	556	470	444	204
35°	355	437	495	385	355	221
45°	252	344	414	292	252	194
55°	145	245	314	198	145	130
65°	51	131	142	86	51	53
75°	14	32	34	17	14	15
85°	2	3	2	1	2	3
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	581.0	581.0	581.0	581.0	581.0	581.0	581.0	581.0	581.0	581.0	581.0
0.5°	578.9	581.4	581.2	580.9	581.2	581.8	582.1	582.1	581.7	583.4	582.2
1°	577.5	580.4	580.6	580.8	581.7	582.7	583.3	583.3	582.9	584.3	582.7
1.5°	575.9	579.2	579.9	580.7	581.9	583.3	584.4	584.4	584.2	585.0	583.0
2°	574.3	578.1	579.1	580.4	582.1	584.1	585.4	585.4	585.3	585.8	583.3
2.5°	572.6	576.8	578.2	580.2	582.2	584.7	586.5	587.0	586.4	586.5	583.5
3°	570.9	575.5	577.4	579.8	582.3	585.3	587.4	588.1	587.3	587.1	583.7
3.5°	569.3	574.1	576.4	579.3	582.3	585.9	588.3	589.1	588.4	587.6	583.8
4°	567.4	572.6	575.4	578.8	582.2	586.3	589.0	590.1	589.2	588.1	583.8
4.5°	565.6	571.2	574.2	578.2	582.1	586.6	589.7	590.9	590.1	588.5	583.7
5°	563.6	569.6	573.0	577.6	581.9	586.8	590.4	591.7	590.8	588.8	583.5
5.5°	561.7	568.0	571.9	576.8	581.6	587.0	590.9	592.5	591.4	589.0	583.2
6°	559.6	566.3	570.5	576.0	581.2	587.1	591.4	593.1	592.1	589.1	583.0
6.5°	557.5	564.5	569.2	575.1	580.7	587.2	591.8	593.6	592.6	589.2	582.7
7°	555.4	562.8	567.8	574.2	580.2	587.2	592.3	594.3	593.0	589.2	582.3
7.5°	553.2	560.9	566.3	573.3	579.6	587.1	592.5	594.7	593.3	589.1	581.8
8°	550.9	559.0	564.7	572.1	579.0	587.0	592.7	595.0	593.6	589.0	581.1
8.5°	548.6	557.0	563.1	570.9	578.3	586.7	592.9	595.3	593.8	588.7	580.5
9°	546.2	555.0	561.4	569.7	577.5	586.5	592.9	595.5	594.1	588.5	579.8
9.5°	543.8	552.9	559.7	568.4	576.6	586.1	592.9	595.6	594.1	588.1	578.9
10°	541.3	550.8	557.8	567.1	575.6	585.5	592.8	595.7	594.1	587.5	578.1
10.5°	538.9	548.6	555.9	565.6	574.6	585.1	592.7	595.6	593.8	587.0	577.1
11°	536.3	546.3	554.0	564.0	573.5	584.5	592.4	595.5	593.6	586.4	576.1
11.5°	533.7	544.1	552.0	562.5	572.3	583.9	592.1	595.3	593.4	585.8	574.9
12°	530.9	541.6	550.0	560.9	571.0	583.1	591.7	595.1	593.0	584.9	573.8
12.5°	528.3	539.2	547.8	559.1	569.8	582.3	591.2	594.7	592.6	584.1	572.5
13°	525.5	536.7	545.7	557.3	568.4	581.4	590.7	594.3	592.1	583.1	571.2
13.5°	522.6	534.2	543.4	555.5	567.0	580.5	590.1	593.7	591.5	582.2	569.8
14°	519.8	531.7	541.1	553.5	565.4	579.5	589.3	593.2	590.9	581.0	568.2
14.5°	516.7	529.0	538.8	551.6	563.8	578.3	588.6	592.6	590.1	579.9	566.7
15°	513.8	526.4	536.4	549.5	562.1	577.0	587.7	591.7	589.2	578.6	565.1
15.5°	510.8	523.6	533.9	547.4	560.3	575.9	586.8	590.9	588.3	577.4	563.4
16°	507.7	520.7	531.2	545.2	558.4	574.5	585.8	590.1	587.3	575.9	561.7
16.5°	504.6	517.9	528.6	542.9	556.6	573.0	584.7	589.0	586.3	574.4	559.8
17°	501.3	515.0	526.0	540.5	554.6	571.6	583.5	588.0	585.1	572.8	557.8
17.5°	498.1	512.0	523.3	538.2	552.6	570.0	582.3	586.8	583.9	571.2	555.8
18°	494.9	509.0	520.5	535.7	550.4	568.3	581.0	585.5	582.5	569.5	553.7
18.5°	491.5	505.9	517.6	533.1	548.2	566.5	579.7	584.3	581.0	567.7	551.6
19°	488.0	502.8	514.6	530.5	545.8	564.9	578.2	582.9	579.7	565.9	549.4
19.5°	484.6	499.5	511.7	527.8	543.5	563.0	576.6	581.4	578.1	563.9	547.1
20°	481.2	496.4	508.7	525.2	541.1	561.0	575.0	579.9	576.5	561.9	544.7
20.5°	477.7	493.0	505.6	522.3	538.5	559.0	573.4	578.3	574.8	559.8	542.4
21°	473.9	489.8	502.5	519.5	536.0	556.9	571.6	576.6	573.0	557.7	539.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	463.1	479.4	492.6	510.3	527.9	550.1	565.8	571.0	567.2	550.9	532.0
23°	459.3	475.8	489.2	507.2	525.0	547.7	563.7	569.2	565.1	548.4	529.1
23.5°	455.4	472.2	485.8	504.0	522.0	545.3	561.6	567.1	563.0	545.9	526.4
24°	451.5	468.5	482.2	500.8	519.1	542.7	559.4	565.0	560.8	543.3	523.5
24.5°	447.6	464.9	478.6	497.3	516.0	540.1	557.1	562.8	558.4	540.7	520.5
25°	443.6	461.1	475.1	494.0	512.9	537.4	554.7	560.4	556.1	538.0	517.5
25.5°	439.7	457.2	471.4	490.5	509.6	534.6	552.2	558.1	553.6	535.2	514.4
26°	435.6	453.4	467.6	486.9	506.4	531.8	549.7	555.7	551.1	532.4	511.3
26.5°	431.5	449.5	463.8	483.2	503.0	528.9	547.2	553.2	548.6	529.5	508.1
27°	427.3	445.6	460.0	479.7	499.6	526.0	544.5	550.6	545.9	526.5	504.8
27.5°	423.1	441.7	456.1	476.0	496.2	522.9	541.7	548.0	543.2	523.6	501.5
28°	418.9	437.6	452.3	472.2	492.5	519.7	539.0	545.3	540.5	520.4	498.1
28.5°	414.4	433.4	448.3	468.3	488.9	516.6	536.2	542.5	537.5	517.3	494.7
29°	410.1	429.3	444.2	464.3	485.2	513.3	533.1	539.6	534.7	514.0	491.1
29.5°	405.8	425.1	440.2	460.5	481.6	510.0	530.2	536.8	531.7	510.8	487.6
30°	401.4	421.0	436.0	456.5	477.8	506.7	527.1	533.9	528.7	507.5	483.9
30.5°	396.9	416.6	431.8	452.5	473.9	503.1	524.0	530.8	525.6	504.0	480.3
31°	392.4	412.2	427.6	448.5	470.1	499.6	520.8	527.7	522.4	500.7	476.6
31.5°	387.8	407.9	423.3	444.2	466.1	496.1	517.5	524.5	519.2	497.2	472.8
32°	383.3	403.5	419.0	440.0	462.0	492.4	514.2	521.3	515.9	493.7	469.1
32.5°	378.6	398.9	414.6	435.7	457.9	488.7	510.9	518.1	512.5	490.1	465.3
33°	374.0	394.5	410.0	431.5	453.8	484.8	507.4	514.9	509.2	486.5	461.3
33.5°	369.3	390.0	405.6	427.1	449.6	481.0	503.9	511.3	505.7	482.7	457.4
34°	364.5	385.5	401.2	422.7	445.5	477.3	500.3	507.8	502.3	479.0	453.4
34.5°	359.7	380.8	396.7	418.2	441.2	473.3	496.7	504.4	498.7	475.4	449.4
35°	354.9	376.1	392.2	413.9	436.9	469.3	493.0	500.9	495.1	471.5	445.3
35.5°	350.1	371.4	387.5	409.3	432.5	465.3	489.2	497.2	491.5	467.6	441.3
36°	345.1	366.7	382.8	404.8	428.2	461.2	485.6	493.4	487.8	463.6	437.0
36.5°	340.2	361.9	378.1	400.1	423.8	457.1	481.6	489.8	484.1	459.8	432.8
37°	335.3	357.1	373.5	395.6	419.4	452.8	477.7	486.1	480.2	455.7	428.7
37.5°	330.3	352.3	368.7	391.0	414.8	448.6	473.7	482.2	476.4	451.7	424.5
38°	325.2	347.4	363.8	386.3	410.2	444.3	469.7	478.3	472.5	447.6	420.2
38.5°	320.1	342.5	359.0	381.4	405.6	440.0	465.7	474.4	468.6	443.6	415.9
39°	315.2	337.5	354.2	376.8	401.2	435.7	461.6	470.6	464.7	439.4	411.6
39.5°	310.2	332.6	349.3	372.0	396.4	431.3	457.4	466.5	460.8	435.2	407.3
40°	304.8	327.7	344.4	367.3	391.7	426.7	453.3	462.4	456.7	431.0	402.8
40.5°	299.8	322.7	339.5	362.4	386.9	422.3	449.1	458.4	452.6	426.8	398.5
41°	294.5	317.6	334.5	357.6	382.2	417.8	444.7	454.4	448.5	422.5	394.0
41.5°	289.4	312.6	329.6	352.8	377.5	413.2	440.5	450.2	444.3	418.4	389.6
42°	284.0	307.5	324.4	348.0	372.8	408.6	436.1	445.9	440.1	414.0	385.1
42.5°	279.0	302.4	319.6	343.1	368.0	404.1	431.9	441.7	435.9	409.6	380.5
43°	273.6	297.2	314.6	338.3	363.2	399.4	427.4	437.5	431.7	405.1	376.0
43.5°	268.2	292.1	309.6	333.3	358.4	394.8	423.0	433.1	427.4	400.8	371.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	252.4	276.4	294.4	318.6	343.9	380.6	409.4	420.0	414.2	387.1	357.5
45.5°	247.0	271.3	289.5	313.7	339.0	375.9	404.8	415.6	409.8	382.4	352.8
46°	241.7	266.0	284.3	308.7	334.2	371.2	400.2	411.0	405.3	377.8	348.1
46.5°	236.3	260.8	279.4	303.7	329.4	366.3	395.5	406.5	400.8	373.1	343.2
47°	231.1	255.6	274.2	298.8	324.5	361.5	390.7	401.8	396.1	368.2	338.4
47.5°	225.6	250.4	269.2	293.9	319.5	356.7	386.1	397.1	391.3	363.4	333.4
48°	220.0	245.1	264.0	289.0	314.7	351.9	381.3	392.4	386.7	358.3	328.4
48.5°	214.8	239.8	259.0	284.0	309.8	347.0	376.4	387.6	381.9	353.2	323.4
49°	209.4	234.6	253.9	279.1	304.9	342.0	371.5	382.7	377.0	348.1	318.2
49.5°	204.1	229.4	248.9	274.1	299.9	337.0	366.7	377.8	371.8	342.8	313.1
50°	198.6	224.1	244.0	269.1	295.0	332.1	361.5	372.8	366.8	337.6	307.9
50.5°	193.2	218.9	238.8	264.3	290.1	327.1	356.4	367.6	361.5	332.1	302.9
51°	187.8	213.5	233.8	259.3	285.2	322.0	351.2	362.4	356.3	326.9	297.9
51.5°	182.5	208.3	228.8	254.4	280.2	317.0	346.0	357.0	350.9	321.7	292.9
52°	177.1	203.1	223.7	249.4	275.2	311.7	340.6	351.5	345.4	316.8	288.2
52.5°	171.8	197.9	218.7	244.5	270.1	306.6	335.3	346.1	340.0	311.9	283.3
53°	166.4	192.6	213.7	239.6	265.1	301.2	329.8	340.8	334.8	306.8	278.3
53.5°	161.0	187.5	208.7	234.7	260.2	296.0	324.3	335.3	329.8	301.4	272.6
54°	155.8	182.3	203.8	229.6	255.1	290.7	319.1	330.2	324.9	295.3	266.7
54.5°	150.5	177.2	198.7	224.8	250.2	285.7	313.9	325.4	319.7	288.6	260.0
55°	145.2	172.0	193.8	219.8	245.4	280.6	309.0	320.4	314.4	281.1	253.0
55.5°	140.0	166.8	188.9	215.1	240.6	275.8	303.9	314.9	307.9	273.7	245.8
56°	134.8	161.9	183.9	210.3	235.8	270.8	298.5	308.7	300.9	265.5	238.3
56.5°	129.6	156.8	179.1	205.4	231.0	265.4	292.5	301.8	293.6	257.3	230.9
57°	124.5	151.7	174.4	200.8	225.7	259.6	286.1	294.7	285.7	248.9	223.3
57.5°	119.3	146.7	169.6	196.1	220.5	253.9	279.3	286.8	277.2	240.6	215.2
58°	114.5	141.8	164.7	191.4	214.9	247.6	272.2	278.8	268.6	231.6	207.2
58.5°	109.4	137.0	159.9	186.3	209.4	241.1	264.9	270.1	259.8	222.6	199.2
59°	104.5	132.1	155.1	181.3	203.5	234.5	256.9	261.4	250.7	213.7	191.3
59.5°	99.6	127.3	150.3	176.1	197.8	227.6	248.9	252.1	241.4	205.0	183.2
60°	94.8	122.4	145.5	171.0	191.8	220.8	240.7	243.0	232.0	195.9	175.3
60.5°	90.1	117.6	140.4	165.8	186.0	213.7	232.4	233.7	222.7	187.1	167.4
61°	85.5	113.0	135.6	160.5	179.8	206.6	223.8	224.7	213.4	178.3	159.6
61.5°	80.8	108.2	130.7	155.3	173.7	199.3	215.1	215.3	204.0	169.4	151.9
62°	76.4	103.5	125.7	150.0	167.7	192.0	206.7	206.3	194.8	160.8	144.1
62.5°	71.9	98.7	120.9	144.7	161.4	184.6	197.9	197.1	185.5	152.4	136.6
63°	67.6	94.1	115.8	139.5	155.2	177.1	189.3	188.0	176.6	144.5	129.4
63.5°	63.2	89.5	111.0	133.9	149.0	169.6	180.8	179.0	167.6	136.5	122.3
64°	59.2	85.1	106.2	128.7	142.9	162.3	172.6	170.3	159.0	129.0	115.3
64.5°	55.2	80.6	101.4	123.3	136.7	154.8	164.2	161.6	150.6	121.6	108.6
65°	51.4	76.0	96.6	118.1	130.6	147.5	156.2	153.2	142.1	114.5	102.2
65.5°	47.6	71.7	91.8	112.7	124.4	140.2	148.2	144.9	133.8	107.8	96.5
66°	44.0	67.5	87.1	107.4	118.2	133.1	140.3	136.9	125.6	101.2	91.0



TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	34.8	55.2	73.0	91.8	100.3	112.6	117.9	114.3	102.4	84.2	74.2
68°	32.1	51.4	68.5	86.7	94.7	106.1	110.9	107.2	95.9	78.5	69.2
68.5°	29.6	47.6	64.1	81.5	89.2	99.7	104.0	100.4	89.4	72.8	64.7
69°	27.0	43.8	59.6	76.5	83.6	93.8	98.0	94.3	82.9	68.0	60.4
69.5°	25.0	40.1	55.1	71.3	78.1	88.0	92.0	88.3	76.5	63.4	56.3
70°	23.5	36.9	50.8	66.6	72.6	82.1	86.1	82.2	71.1	59.1	52.5
70.5°	22.6	33.7	46.6	61.8	67.6	76.3	80.1	76.3	66.1	55.1	48.9
71°	21.5	30.7	42.6	57.0	62.9	71.2	74.2	71.1	61.3	51.4	45.5
71.5°	20.5	27.6	38.8	52.5	58.3	66.1	69.0	66.2	56.9	47.8	42.3
72°	19.4	24.6	35.6	48.2	53.9	61.3	64.1	61.5	52.9	44.5	39.4
72.5°	18.4	22.4	32.6	44.1	49.6	56.8	59.6	57.2	49.2	41.4	36.4
73°	17.3	20.8	29.5	40.3	45.6	52.6	55.4	53.1	45.7	38.4	33.8
73.5°	16.4	19.7	26.5	36.7	41.9	48.6	51.4	49.4	42.5	35.7	31.3
74°	15.4	18.7	23.3	33.7	38.4	45.0	47.6	45.9	39.5	33.1	28.9
74.5°	14.5	17.8	21.1	30.7	35.1	41.5	44.1	42.6	36.7	30.7	26.7
75°	13.5	16.8	19.1	27.7	32.1	38.2	40.9	39.6	34.0	28.4	24.5
75.5°	12.7	15.9	17.5	24.8	29.3	35.2	37.8	36.8	31.4	26.0	22.5
76°	11.9	14.9	16.1	22.4	26.7	32.3	35.0	34.0	29.0	23.9	20.5
76.5°	11.1	14.1	14.8	20.2	24.2	29.6	32.3	31.6	26.7	22.0	18.7
77°	10.4	13.1	13.8	18.3	22.1	27.3	29.8	29.2	24.4	20.1	16.9
77.5°	9.7	12.3	12.8	16.5	20.0	24.9	27.5	27.0	22.3	18.2	15.2
78°	8.9	11.6	12.1	14.9	18.1	22.7	25.2	24.8	20.3	16.5	13.7
78.5°	8.3	10.8	11.2	13.5	16.3	20.7	23.1	22.7	18.3	14.9	12.2
79°	7.7	10.1	10.6	12.3	14.7	18.8	21.1	20.8	16.4	13.3	10.8
79.5°	7.0	9.3	9.9	11.1	13.2	17.0	19.2	18.9	14.7	12.0	9.8
80°	6.4	8.6	9.2	10.1	11.9	15.3	17.4	17.1	13.0	10.8	8.6
80.5°	5.9	8.0	8.5	9.1	10.6	13.9	15.8	15.5	11.4	9.6	7.5
81°	5.4	7.4	8.0	8.3	9.7	12.3	14.2	14.0	10.2	8.4	6.4
81.5°	4.8	6.8	7.4	7.6	8.6	11.0	12.6	12.5	8.9	7.2	5.3
82°	4.3	6.2	6.8	6.8	7.7	9.9	11.2	11.0	7.7	6.1	4.4
82.5°	3.9	5.7	6.2	6.2	6.6	8.8	10.1	9.9	6.3	4.9	3.7
83°	3.4	5.0	5.7	5.6	5.7	7.8	8.9	8.7	5.0	4.1	2.9
83.5°	2.9	4.6	5.3	5.1	4.9	6.6	7.8	7.6	4.1	3.3	2.3
84°	2.6	4.1	4.7	4.6	4.3	5.6	6.6	6.4	3.2	2.5	1.8
84.5°	2.2	3.7	4.2	4.2	3.8	4.8	5.5	5.3	2.4	1.9	1.4
85°	1.9	3.3	3.8	3.8	3.3	4.1	4.6	4.3	1.7	1.3	0.9
85.5°	1.6	2.8	3.5	3.4	2.7	3.4	3.8	3.5	1.1	0.8	0.6
86°	1.3	2.4	3.0	3.0	2.4	2.8	3.0	2.7	0.6	0.5	0.3
86.5°	0.9	2.0	2.6	2.6	2.0	2.3	2.4	2.0	0.4	0.2	0.1
87°	0.7	1.7	2.2	2.3	1.7	1.8	1.9	1.5	0.3	0.1	0.0
87.5°	0.5	1.4	1.9	2.0	1.4	1.5	1.4	1.1	0.2	0.0	0.0
88°	0.4	1.1	1.6	1.7	1.2	1.1	0.9	0.6	0.1	0.0	0.0
88.5°	0.2	0.8	1.3	1.4	0.8	0.7	0.6	0.3	0.1	0.0	0.0



TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.3	0.5	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0

TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	581.0	581.0	581.0	581.0	581.0	581.0
0.5°	580.9	580.4	579.9	579.6	579.1	578.9
1°	580.8	579.8	578.8	578.2	577.6	577.5
1.5°	580.6	579.1	577.7	576.6	576.0	575.9
2°	580.4	578.4	576.5	575.1	574.3	574.3
2.5°	580.0	577.6	575.3	573.6	572.6	572.6
3°	579.6	576.7	573.9	571.9	570.8	570.9
3.5°	579.1	575.9	572.5	570.2	569.1	569.3
4°	578.5	574.8	571.0	568.4	567.1	567.4
4.5°	578.0	573.8	569.5	566.5	565.2	565.6
5°	577.2	572.6	567.9	564.6	563.1	563.6
5.5°	576.5	571.4	566.2	562.6	561.1	561.7
6°	575.7	570.1	564.4	560.7	559.0	559.6
6.5°	574.7	568.7	562.6	558.6	556.8	557.5
7°	573.8	567.4	560.8	556.5	554.6	555.4
7.5°	572.7	565.8	558.9	554.2	552.2	553.2
8°	571.6	564.2	556.9	551.9	549.9	550.9
8.5°	570.4	562.5	554.8	549.6	547.5	548.6
9°	569.1	560.9	552.7	547.2	545.0	546.2
9.5°	567.8	559.1	550.5	544.8	542.5	543.8
10°	566.3	557.2	548.2	542.3	540.0	541.3
10.5°	564.9	555.4	545.8	539.6	537.3	538.9
11°	563.3	553.3	543.4	537.1	534.7	536.3
11.5°	561.7	551.2	540.9	534.4	532.0	533.7
12°	559.9	549.1	538.4	531.7	529.1	530.9
12.5°	558.1	546.9	535.8	528.8	526.3	528.3
13°	556.2	544.7	533.1	526.0	523.5	525.5
13.5°	554.4	542.3	530.4	523.1	520.6	522.6
14°	552.4	539.9	527.6	520.2	517.6	519.8
14.5°	550.4	537.4	524.8	517.2	514.5	516.7
15°	548.2	534.9	521.9	514.0	511.5	513.8
15.5°	545.9	532.3	518.8	510.9	508.2	510.8
16°	543.6	529.6	515.9	507.7	505.2	507.7
16.5°	541.3	526.8	512.8	504.5	501.9	504.6
17°	538.9	524.0	509.6	501.2	498.7	501.3
17.5°	536.4	521.1	506.4	497.7	495.3	498.1
18°	533.8	518.1	503.1	494.5	492.0	494.9
18.5°	531.1	515.1	499.7	490.9	488.4	491.5
19°	528.5	512.0	496.3	487.6	485.0	488.0
19.5°	525.7	508.9	492.8	483.9	481.5	484.6
20°	522.8	505.6	489.2	480.3	477.9	481.2
20.5°	519.9	502.4	485.7	476.5	474.3	477.7
21°	517.0	499.0	482.0	472.8	470.5	473.9

TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	507.7	488.6	470.7	461.3	459.2	463.1
23°	504.5	485.0	467.0	457.4	455.3	459.3
23.5°	501.2	481.4	463.1	453.5	451.4	455.4
24°	497.7	477.6	459.1	449.5	447.4	451.5
24.5°	494.4	473.9	455.1	445.3	443.4	447.6
25°	490.9	470.0	450.9	441.2	439.3	443.6
25.5°	487.3	466.3	446.9	437.1	435.2	439.7
26°	483.8	462.3	442.8	432.9	431.1	435.6
26.5°	480.1	458.5	438.6	428.6	426.9	431.5
27°	476.4	454.4	434.4	424.3	422.7	427.3
27.5°	472.6	450.4	430.1	420.0	418.4	423.1
28°	468.9	446.3	425.8	415.7	414.0	418.9
28.5°	465.0	442.1	421.5	411.3	409.7	414.4
29°	461.1	438.0	417.1	406.8	405.4	410.1
29.5°	457.1	433.8	412.7	402.3	400.9	405.8
30°	453.1	429.6	408.3	397.9	396.4	401.4
30.5°	449.1	425.2	403.7	393.2	392.0	396.9
31°	445.1	420.9	399.2	388.7	387.4	392.4
31.5°	440.9	416.4	394.6	384.1	382.8	387.8
32°	436.8	412.0	390.0	379.4	378.1	383.3
32.5°	432.5	407.6	385.5	374.7	373.5	378.6
33°	428.3	403.2	380.8	370.0	368.8	374.0
33.5°	424.0	398.6	376.2	365.3	364.0	369.3
34°	419.7	394.2	371.4	360.6	359.2	364.5
34.5°	415.5	389.6	366.8	355.8	354.5	359.7
35°	411.1	385.0	361.9	351.0	349.5	354.9
35.5°	406.7	380.5	357.2	346.1	344.8	350.1
36°	402.3	375.8	352.6	341.3	339.8	345.1
36.5°	397.9	371.3	347.8	336.5	335.0	340.2
37°	393.3	366.7	343.0	331.6	330.0	335.3
37.5°	388.8	362.0	338.3	326.6	325.1	330.3
38°	384.3	357.3	333.5	321.7	320.0	325.2
38.5°	379.8	352.6	328.7	316.9	315.1	320.1
39°	375.4	348.0	323.8	311.9	310.0	315.2
39.5°	370.8	343.3	319.1	307.0	305.0	310.2
40°	366.1	338.6	314.3	302.1	300.0	304.8
40.5°	361.6	333.9	309.5	297.1	294.9	299.8
41°	357.0	329.1	304.7	292.2	289.7	294.5
41.5°	352.5	324.5	299.8	287.3	284.6	289.4
42°	347.9	319.9	295.0	282.2	279.6	284.0
42.5°	343.1	315.1	290.3	277.3	274.4	279.0
43°	338.5	310.4	285.6	272.2	269.2	273.6
43.5°	333.9	305.7	280.6	267.4	264.2	268.2



TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	319.8	291.6	266.4	252.5	248.5	252.4
45.5°	315.1	287.0	261.5	247.7	243.5	247.0
46°	310.5	282.4	256.9	242.7	238.3	241.7
46.5°	305.6	277.6	252.1	237.8	233.1	236.3
47°	300.8	272.9	247.5	232.9	227.9	231.1
47.5°	296.0	268.2	242.5	227.9	222.7	225.6
48°	291.0	263.5	238.0	223.1	217.5	220.0
48.5°	286.2	258.8	233.2	218.1	212.4	214.8
49°	281.3	254.2	228.5	213.3	207.2	209.4
49.5°	276.2	249.4	223.8	208.4	202.2	204.1
50°	271.4	244.7	219.1	203.5	196.9	198.6
50.5°	266.6	239.9	214.4	198.8	191.8	193.2
51°	261.8	235.2	209.7	194.0	186.7	187.8
51.5°	257.1	230.6	205.1	189.1	181.7	182.5
52°	252.7	226.2	200.6	184.4	176.7	177.1
52.5°	248.0	221.8	196.1	179.7	171.5	171.8
53°	243.0	217.4	191.8	175.1	166.5	166.4
53.5°	237.8	212.9	187.3	170.4	161.5	161.0
54°	232.1	208.2	182.9	165.7	156.5	155.8
54.5°	226.4	203.3	178.3	161.3	151.6	150.5
55°	220.1	198.3	173.7	156.8	146.7	145.2
55.5°	213.8	192.9	168.9	152.1	141.9	140.0
56°	207.2	187.6	164.2	147.6	137.2	134.8
56.5°	200.7	182.1	159.3	142.8	132.3	129.6
57°	193.8	176.5	154.5	138.2	127.6	124.5
57.5°	187.1	170.7	149.6	133.5	122.9	119.3
58°	180.1	164.9	144.7	129.0	118.3	114.5
58.5°	173.2	159.1	139.6	124.4	113.6	109.4
59°	166.4	153.1	134.6	119.7	109.0	104.5
59.5°	159.5	147.3	129.6	115.1	104.4	99.6
60°	152.6	141.4	124.5	110.6	99.8	94.8
60.5°	145.9	135.5	119.3	105.9	95.3	90.1
61°	139.3	129.6	114.2	101.4	90.7	85.5
61.5°	132.5	123.8	109.0	96.8	86.3	80.8
62°	125.9	118.1	104.0	92.3	82.0	76.4
62.5°	119.6	112.4	98.8	87.7	77.6	71.9
63°	113.3	106.8	93.7	83.2	73.4	67.6
63.5°	107.2	101.2	88.8	78.5	69.2	63.2
64°	101.5	95.8	83.8	73.9	65.2	59.2
64.5°	95.9	90.6	79.0	69.4	61.2	55.2
65°	90.3	85.5	74.2	65.1	57.3	51.4
65.5°	84.9	80.2	69.6	60.6	53.4	47.6
66°	79.3	75.2	64.9	56.2	49.7	44.0



TEST NUMBER: P775828

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	64.3	61.4	52.1	44.2	38.8	34.8
68°	60.0	57.0	48.0	40.4	35.8	32.1
68.5°	55.8	52.8	44.1	36.7	32.9	29.6
69°	51.8	48.9	40.4	33.8	30.0	27.0
69.5°	48.1	45.3	36.8	31.0	27.1	25.0
70°	44.7	41.7	33.9	28.0	24.2	23.5
70.5°	41.4	38.4	31.2	25.2	22.1	22.6
71°	38.2	35.7	28.4	22.8	20.6	21.5
71.5°	35.4	33.0	25.5	20.8	19.5	20.5
72°	32.6	30.4	23.2	19.0	18.6	19.4
72.5°	30.1	27.6	21.1	17.4	17.6	18.4
73°	27.7	25.0	19.1	16.1	16.7	17.3
73.5°	25.4	22.7	17.3	14.8	15.8	16.4
74°	23.3	20.7	15.8	13.8	14.8	15.4
74.5°	21.2	18.8	14.4	12.9	14.0	14.5
75°	19.3	17.1	13.0	12.1	13.1	13.5
75.5°	17.5	15.4	11.9	11.3	12.3	12.7
76°	16.0	14.0	10.7	10.6	11.4	11.9
76.5°	14.3	12.5	9.8	10.0	10.7	11.1
77°	12.9	11.2	8.9	9.2	10.0	10.4
77.5°	11.6	10.1	8.1	8.7	9.2	9.7
78°	10.4	9.0	7.4	8.1	8.6	8.9
78.5°	9.3	8.0	6.7	7.5	8.0	8.3
79°	8.2	7.1	6.1	6.9	7.4	7.7
79.5°	7.1	6.3	5.6	6.3	6.7	7.0
80°	6.1	5.5	5.0	5.8	6.1	6.4
80.5°	5.3	4.8	4.6	5.3	5.6	5.9
81°	4.5	4.2	4.2	4.8	5.0	5.4
81.5°	3.8	3.8	3.8	4.3	4.5	4.8
82°	3.2	3.4	3.4	3.9	4.0	4.3
82.5°	2.6	2.8	2.9	3.5	3.6	3.9
83°	2.1	2.4	2.6	3.0	3.2	3.4
83.5°	1.7	2.0	2.2	2.6	2.7	2.9
84°	1.4	1.7	1.9	2.2	2.3	2.6
84.5°	0.9	1.4	1.7	1.9	1.9	2.2
85°	0.7	1.2	1.4	1.6	1.6	1.9
85.5°	0.5	0.8	1.1	1.4	1.3	1.6
86°	0.3	0.6	0.8	1.1	1.1	1.3
86.5°	0.1	0.4	0.5	0.7	0.8	0.9
87°	0.0	0.2	0.3	0.5	0.6	0.7
87.5°	0.0	0.1	0.1	0.3	0.4	0.5
88°	0.0	0.0	0.0	0.1	0.2	0.4
88.5°	0.0	0.0	0.0	0.0	0.1	0.2



TEST NUMBER: P775828
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - - 90°-270° - · - 135°-315°

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21.5°	470.3	486.3	499.2	516.4	533.3	554.7	569.7	574.8	571.2	555.5	537.3
22°	466.8	482.9	496.0	513.4	530.7	552.5	567.8	572.9	569.3	553.2	534.6



44°	263.0	286.9	304.5	328.4	353.5	390.0	418.3	428.7	423.1	396.3	366.9
44.5°	257.7	281.7	299.5	323.6	348.7	385.4	413.9	424.3	418.8	391.8	362.2



66.5°	40.6	63.3	82.4	102.2	112.2	126.1	132.7	129.1	117.5	95.6	85.3
67°	37.3	59.1	77.8	96.9	106.3	119.2	125.3	121.6	110.0	89.9	79.7



89°	0.1	0.6	1.1	1.2	0.6	0.5	0.3	0.1	0.0	0.0	0.0
89.5°	0.0	0.4	0.7	0.8	0.4	0.3	0.1	0.0	0.0	0.0	0.0

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21.5°	513.9	495.5	478.3	469.1	466.8	470.3
22°	510.8	492.1	474.6	465.2	463.1	466.8



44°	329.3	301.1	275.8	262.4	259.0	263.0
44.5°	324.4	296.3	271.1	257.5	253.8	257.7

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66.5°	73.8	70.6	60.5	52.1	45.9	40.6
67°	68.8	65.9	56.1	48.0	42.2	37.3

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89°	0.0	0.0	0.0	0.0	0.0	0.1
89.5°	0.0	0.0	0.0	0.0	0.0	0.0

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(END OF REPORT)